



## **AGFD Aquatic Invasive Species Program**

### **Fishing/Outreach Survey, 2012 Report**

**Location:** Bartlett Lake and Lake Pleasant, Maricopa County, Arizona; Lake Havasu, Mohave County, Arizona.

**Date:** May 2012 to September 2012

**Personnel:** Samantha Rathbun, Steve Skiba, Kami Silverwood

#### **Objectives:**

- I. To determine the fishing/catch habits of anglers at Bartlett Lake, Lake Havasu and Lake Pleasant.
- II. To determine the percentage of the boating public's awareness of the AGFD "Don't Move a Mussel – Now it's the Law" (DMAM) outreach campaign, such that where/how did they hear of the DMAM message and what they are doing to proactively stop the spread, by Arizona law and rule.
- III. "Pull the Plug" surveys
  - A. To determine the percentage of the boating public's effort to abide by Arizona law/rule to remove any watercraft/boat plugs before leaving the vicinity of an infested water body.

#### **Materials:**

- "Aquatic Invasive Species (AIS) program angling and boating survey" form
- "Don't Move a Mussel- Now it's the Law" brochures.
- "Aquatic Invasive Species (AIS) programs spot check survey-pulling plug" form
- Binoculars

**Methods:** Using the AIS program angling and boating survey, employees would briefly talk with watercraft users at the boat ramp. The boat ramps were selected daily at random. The angling portion of the survey was to see if the boaters had been fishing that day, how many people were fishing in their party, if they used bait or lures while fishing, and what fish species they caught and how many. Next, they were asked if they had heard about the quagga mussel and if they had heard or seen the 'Stop Aquatic Hitchhikers' or the 'Don't Move a Mussel-Now it's the Law' messages. If they had heard or seen either of the messages, they were then asked where they had heard or seen the message. Their options were as follows: radio announcement,

billboard, TV, info signs at lake, or other. The last question asked was what they were doing to prevent transporting quagga mussels. Their options were as follows: clean my boat, drain my live-well, wiped down or hand dried my boat, let my boat sit and dry for about a week, let my boat sit and dry for about a month, complete decontamination of my boat, including hot water pressure washing, vinegar in bilge, and let dry for about a week, or other.

Using an AIS program spot check survey ("Pulling their boat plugs"), AGFD Interns would sit and watch watercraft owners/transporters leaving the vicinity of an infested water body. If needed, employees would use binoculars to determine if the plug was pulled prior to any boater leaving the boat ramp area. These boat ramps were selected daily and semi-randomly according to the most boat traffic.

### **Conclusions:**

A total of 114 surveys were done at **Bartlett Lake**. The data showed 21% of boaters had been fishing, with an equal amount of anglers using lures as they did bait. Anglers identified mainly catching largemouth bass, and sunfish at Bartlett, with the total number of each species caught as follows; 105 largemouth/smallmouth bass, 6 crappie, 15 bluegill or other sunfish, and 7 catfish. Data showed that 81% had heard of quagga mussels, 29% had heard or seen the 'Stop Aquatic Hitchhikers' message, and 96% had heard or seen the 'Don't Move a Mussel' message. Of these boaters who had heard or seen the 'Don't Move a Mussel' message, our results showed the following means of recognition to be the following: <1% radio, 0% billboard, 2% TV, 95% info signs at lake, and 9% other. The results of boaters self inspection and preventing transportation were as follows; 91% cleaned boat, 17% drained live well, 95% pulled the drain plug, 96% let boat sit a week, 51% let boat sit a month, and 0% did complete decontaminations.

A total of 190 surveys were done at **Lake Havasu**. The data showed 3% of boaters had been fishing, with an almost even usage of bait and lures. Anglers identified catching largemouth and smallmouth bass at Havasu, with a total number of 2 largemouth/smallmouth bass. A majority of these surveys at Lake Havasu were done in the evening. Most anglers were off the lake and done fishing by this time. Data showed that 99% of the boaters surveyed had heard of quagga mussels, 33% had heard or seen the 'Stop Aquatic Hitchhikers' message, and 77% had heard or seen the 'Don't Move a mussel' message. Of these boaters who had heard or seen the 'Don't Move a Mussel' message, our results showed the following means of recognition to be the following: 18% radio, 29% billboard, 0% TV, 64% info signs at lake, and 18% other. The results of boaters self inspection and preventing transportation were as follows; 92% cleaned boat, 7% drained live well, 76% pulled the drain plug, 10% let boat sit a week, 2% let boat sit a month, 1% did complete decontaminations.

A total of 189 surveys were done at **Lake Pleasant**. The data showed 15% of boaters had been fishing, with the vast majority of anglers using lures as opposed to bait. Anglers identified

mainly catching striped bass, largemouth/smallmouth bass, and sunfish at Pleasant, with the total number of each species caught as follows; 13 striped bass, 4 yellow/white bass, 172 largemouth/smallmouth bass, 5 crappie, 1 red ear sunfish, 19 bluegill or other sunfish, and 4 catfish. Data showed that 80% had heard of quagga mussels, 32% had heard or seen the 'Stop Aquatic Hitchhikers' message, and 99% had heard or seen the 'Don't Move a Mussel' message. Of these boaters who had heard or seen the 'Don't Move a Mussel' message, our results showed the following means of recognition to be the following: 0% radio, 0% billboard, 0% TV, 87% info signs at lake, and 10% other. The results of boaters self inspection and preventing transportation were as follows; 86% cleaned boat, 18% drained live well, 96% pulled the drain plug, 96% let boat sit a week, 53% let boat sit a month, and 1% did complete decontaminations.

A total of 493 surveys were completed for **all three of these lakes**. The data showed out of the 12% of boaters that had been fishing, lures were used nearly three times more than bait. In total, most anglers of these three lakes identified catching mainly largemouth/smallmouth bass, with the total number of each fish species caught as follows; 13 striped bass, 4 yellow/white bass, 279 largemouth/smallmouth bass, 11 crappie, 1 red ear sunfish, 34 bluegill or other sunfish and 11 catfish. When we asked the 493 surveyed if they had heard of the quagga mussel 88% said yes. When asked if they had heard or seen the 'Stop Aquatic Hitchhiker' message, 31% said yes. We then asked if they had heard or seen the 'Don't Move a Mussel' message and 90% said yes. Of these boaters who had heard or seen the 'Don't Move a Mussel' message, our results showed the following means of recognition to be the following: 7% radio, 11% billboards, 1% TV, 83% info signs at lake, 13% other (e.g. newspaper, park ranger, game and fish interns, friends & family and fishing clubs). The last questions asked of the boat owner concerning self inspection and preventing transportation of aquatic invasive species were as follows: 90% cleaned their boat, 14% drained the live well, 88% pulled the drain plug, 63% let boat sit a week, 33% let boat sit a month, and <1% did complete decontaminations.

During our "Pull the Plug" survey, results showed the following:

**Bartlett Lake** - A total of 126 boats were observed leaving this lake. The data showed that 42% of watercraft owners/transporters did not pull the plug before leaving the vicinity. Bartlett Lake is not an infested lake as this time but was included in this study survey.

**Lake Havasu** - A total of 687 boats were observed leaving this lake. The data showed that 66% of watercraft owners/transporters did not pull the plug before leaving the vicinity.

**Lake Pleasant** - A total of 362 boats were observed leaving this lake. The data showed that 46% of watercraft owners/transporters did not pull the plug before leaving the vicinity.

**GRAND TOTAL** - 1175 boats were observed leaving all three lakes total. The data showed that 57% of watercraft owners/transporters did not pull the plug before leaving the vicinity.

**Recommendations:** The results show that boater awareness of the quagga mussels and other aquatic invasive species has increased through outreach and education since 2011 but efforts still need to continue to close the gap. Signs at the lake, radio announcements, and billboards along the Colorado River have proven to be a valuable tool for passive outreach to the boating public and should continue with consideration of expanding efforts. Personal on the ground at the boat ramps is still the best form of outreach and education, but with limited personal, not all lakes and launch ramps can be covered during the boating season. Explaining what ‘Don’t Move a Mussel-Now It’s the Law’ means and the protocols/methods watercraft users can employ to help prevent the spread of invasive species are fundamental to our outreach and public information education efforts. Specific future recommendations include:

1. There is an apparent need for “feet-on-the-ground” personal communication and training at all affected waters to enhance the current outreach and education that is currently being done regarding Arizona aquatic invasive species laws and rules on proper, required decontamination protocols when leaving the vicinity of an affected water body (AIS Director’s Orders 1, 2, and 3).
2. Develop and implement a widespread “Don’t Move a Mussel – Now It’s the Law” outreach campaign on the lower Colorado River, specifically Havasu, that focuses on required “Pull the Plug” rules and decontamination protocols.
3. Lake Havasu appeared to have a large increase in aquatic vegetation growth during the summer of 2012 and watercraft users were observed leaving the vicinity with attached vegetation. This survey shows that, in general, watercraft users are not following proper clean, drain and dry procedures when leaving the vicinity of an affected water body. Increased presence at the boat ramps, especially from law enforcement personnel, may be needed to assist in public acceptance and future compliance.
4. In addition, due to low data results from anglers at Lake Havasu, the 2013 surveys should be dispersed throughout the day and launch locations to maximize angling data.

Prepared by: Shay Richardson and Kami Silverwood

Submitted by: Tom McMahon

## **Bartlett Lake Results** - Total Surveys = 114

(Un-infested water in 2012)

<b>Fishing</b>	<b>Yes</b>	<b>No</b>	<b>Missing</b>	<b>Bait</b>	<b>Lure</b>	<b>Both</b>
Did you go fishing today?	21%	75%	4%			
Did you use bait, lure or both?				27%	62%	11%

<b>Type of Fish caught</b>	<b>How many?</b>
striped bass	0
yellow/white bass	0
largemouth/smallmouth bass	105
crappie	6
rainbow trout or other trout	0
red ear sunfish	0
bluegill or other sunfish	15
Other = channel catfish	7

<b>Knowledge about invasive mussels ?</b>	<b>Yes</b>	<b>No</b>
Ever heard of QM?	81%	16%
Heard/Seen 'SAH' message?	29%	68%
Heard/Seen 'DMAM' message?	96%	1%
Missing data = 3%		

<b>How did you hear about message?</b>	<b>Yes</b>	<b>No</b>
Radio	<1%	96%
Billboard	0%	100%
TV	2%	95%
Info signs at Lake	95%	2%
Other	9%	88%
(e.g. interns, park rangers, newspaper article, outreach materials)		
Missing data = 3%		

<b>How they prevented transport??</b>	<b>Yes</b>	<b>No</b>
Clean boat	91%	6%
Drain live-well	16%	81%
Pulled the drain plug	95%	2%
Let sit for week	96%	1%
Let sit for month	51%	46%
Complete decon	0%	97%
Missing date = 3%		

## **Lake Havasu Results** – Total surveys = 190

(Infested water in 2012)

<b>Fishing</b>	<b>Yes</b>	<b>No</b>	<b>Missing</b>	<b>Bait</b>	<b>Lure</b>	<b>Both</b>
Did you go fishing today?	3%	95%	2%			
Did you use bait, lure or both?			17%	33%	33%	17%

<b>Type of Fish caught</b>	<b>How many?</b>
striped bass	0
yellow/white bass	0
largemouth/smallmouth bass	2
crappie	0
rainbow trout or other trout	0
red ear sunfish	0
bluegill or other sunfish	0
Other = channel catfish	0

<b>Know ledge about invasive mussels?</b>	<b>Yes</b>	<b>No</b>	<b>Missing</b>
Ever heard of QM?	99%	0.5%	0.5%
Heard/Seen 'SAH' message?	33%	27%	40%
Heard/Seen 'DMAM' message?	77%	13%	10%

<b>How did you hear about message?</b>	<b>Yes</b>	<b>No</b>
Radio	18%	82%
Billboard	29%	71%
TV	0%	100%
Info signs at Lake	64%	36%
Other	18%	82%
(e.g. outreach materials, family and friends, boat registration, fishing club)		

<b>How they prevented transport?</b>	<b>Yes</b>	<b>No</b>
Clean boat	92%	8%
Drain live-well	7%	93%
Pulled the drain plug	76%	24%
Let sit for week	10%	90%
Let sit for month	2%	98%
Complete decon	1%	99%
Other	1%	99%

## **Lake Pleasant Results** – total surveys = 189

(Infested water in 2012)

<b>Fishing</b>	<b>Yes</b>	<b>No</b>	<b>Missing</b>	<b>Bait</b>	<b>Lure</b>	<b>Both</b>
Did you go fishing today?	16%	84%				
Did you use bait, lure or both?			4%	10%	73%	13%

<b>Type of Fish caught</b>	<b>How many?</b>
striped bass	13
yellow/white bass	4
largemouth/smallmouth bass	172
crappie	5
rainbow trout or other trout	0
red ear sunfish	1
bluegill or other sunfish	19
Other = channel catfish	4

<b>Knowledge about invasive mussels ?</b>	<b>Yes</b>	<b>No</b>
Ever heard of QM?	80%	20%
Heard/ Seen 'SAH' message?	32%	68%
Heard/Seen 'DMAM' message?	99%	1%

<b>How did you hear about message?</b>	<b>Yes</b>	<b>No</b>
Radio	0%	100%
Billboard	0%	100%
TV	0%	100%
Info signs at Lake	87%	13%
Other	10%	90%

(e.g. Intern, family and friends, outreach materials, visitor center, AZGF website, Lake Powell inspection station)

<b>How they prevented transport</b>	<b>Yes</b>	<b>No</b>
Clean boat	86%	14%
Drain live-well	18%	82%
Pulled the drain plug	96%	4%
Let sit for week	96%	4%
Let sit for month	53%	47%
Complete decon	1%	99%
Other	0%	100%

**Total Results - all 3 lakes (Havasu, Pleasant and Bartlett) - Total surveys = 493**

<b>Fishing</b>	<b>Yes</b>	<b>No</b>	<b>Missing</b>	<b>Bait</b>	<b>Lure</b>	<b>Both</b>
Did you go fishing today?	12%	86%	2%			
Did you use bait, lure or both?			1%	20%	66%	13%

<b>Type of Fish caught</b>	<b>How many?</b>
striped bass	13
yellow/white bass	4
largemouth/smallmouth bass	279
crappie	11
rainbow trout or other trout	0
red ear sunfish	1
bluegill or other sunfish	34
Other = channel catfish	11

<b>Know about Quagga Mussel ?</b>	<b>Yes</b>	<b>No</b>	<b>Missing</b>
Ever heard of QM?	88%	12%	0%
Heard/Seen 'SAH' message?	31%	52%	17%
Heard/Seen 'DMAM' message?	90%	5%	5%

<b>How did you hear about message?</b>	<b>Yes</b>	<b>No</b>
Radio	7%	93%
Billboard	11%	89%
TV	1%	99%
Info signs at Lake	83%	17%
Other	13%	87%
(e.g. outreach materials, interns, park rangers, fishing clubs, boat registration, family and friends, AGF website, visitor center, Lake Powell Inspection Center, newspaper article)		

<b>Prevent transporting</b>	<b>Yes</b>	<b>No</b>
Clean boat	90%	10%
Drain live-well	14%	86%
Pulled the drain plug	88%	12%
Let sit for week	63%	37%
Let sit for month	33%	67%
Complete decon	<1%	99%
Other	<1%	99%



### **“Pull the Plug”**

Bartlett Lake; boats observed/surveyed=126

(Un-infested water in 2012)

Pulled plug	Yes =73	No=53
-------------	---------	-------

% pulled plug	Yes=57.94%	No=42.06%
---------------	------------	-----------

Lake Havasu; boats observed/surveyed=687

(Infested water in 2012)

Pulled plug	Yes =194	No=453
-------------	----------	--------

% pulled plug	Yes=34.06%	No=65.94%
---------------	------------	-----------

Lake Pleasant; boats observed/surveyed=362

(Infested water in 2012)

Pulled plug	Yes =194	No=168
-------------	----------	--------

% pulled plug	Yes=53.59%	No=46.41%
---------------	------------	-----------